

## Chronic non-communicable diseases and the functional capacity of elderly people

Júnior, Edson Batista dos Santos; Oliveira, Luciane Paula Araujo Batista de; Silva, Richardson Augusto Rosendo da

Veröffentlichungsversion / Published Version  
Zeitschriftenartikel / journal article

### Empfohlene Zitierung / Suggested Citation:

Júnior, E. B. d. S., Oliveira, L. P. A. B. d., & Silva, R. A. R. d. (2017). Chronic non-communicable diseases and the functional capacity of elderly people. *Revista de Pesquisa: Cuidado é Fundamental Online*, 6(2), 516-524. <https://doi.org/10.9789/2175-5361.2014.v6i2.516-524>

### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY-NC Lizenz (Namensnennung-Nicht-kommerziell) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:  
<https://creativecommons.org/licenses/by-nc/4.0/deed.de>

### Terms of use:

This document is made available under a CC BY-NC Licence (Attribution-NonCommercial). For more Information see:  
<https://creativecommons.org/licenses/by-nc/4.0>

Federal University of Rio de Janeiro State

# Journal of Research Fundamental Care Online

ISSN 2175-5361  
DOI: 10.9789/2175-5361

## RESEARCH

### Doenças crônicas não transmissíveis e a capacidade funcional de idosos

Chronic non-communicable diseases and the functional capacity of elderly people

Enfermedades crónicas no transmisibles y la capacidad funcional de ancianos

Edson Batista dos Santos Júnior <sup>1</sup>, Luciane Paula Araujo Batista de Oliveira <sup>2</sup>, Richardson Augusto Rosendo da Silva <sup>3</sup>

#### ABSTRACT

**Objective:** This study aimed at identifying the relationship between the chronic non-communicable diseases and the functional capacity of domiciled elderly people. **Method:** This is a descriptive and correlational study, with quantitative nature, in which 90 elderly subjects registered in the Family Health Strategy were assessed. **Results:** The study showed a high frequency of chronic diseases in elderly subjects, especially systemic arterial hypertension (SAH) and diabetes mellitus (DM) (97,8% and 24,4%, respectively). Regarding the Daily Life Activities (DLA), 16% of the surveyed elderly showed dependence for at least one activity. In relation to the Instrumental Daily Life Activities, 81% showed some dependence for its accomplishment. **Conclusion:** In the studied reality, being hypertensive, or hypertensive and diabetic at the same time, is related to the presence of functional dependence in the elderly person. **Descriptors:** Aging, Chronic diseases, Everyday activities, Elderly, Nursing.

#### RESUMO

**Objetivo:** O objetivo deste estudo foi identificar a relação entre a presença das doenças crônicas não transmissíveis e a capacidade funcional de idosos domiciliados. **Método:** Trata-se de um estudo descritivo e correlacional, de natureza quantitativa, onde foram avaliados 90 idosos cadastrados na Estratégia Saúde da Família. **Resultados:** Foi demonstrada uma alta frequência de doenças crônicas nos idosos, principalmente hipertensão arterial sistêmica (HAS) e diabetes mellitus (DM) (97,8% e 24,4%, respectivamente). Quanto às Atividades da Vida Diária (AVD), 16% dos idosos apresentaram dependência para pelo menos uma atividade. Em relação às Atividades Instrumentais da Vida Diária (AIVD), 81% apresentaram alguma dependência para sua realização. **Conclusão:** Na realidade estudada, ser hipertenso, ou ser hipertenso e diabético ao mesmo tempo, está relacionado à presença de dependência funcional no idoso. **Descritores:** Envelhecimento, Doenças crônicas, Atividades cotidianas, Idoso, Enfermagem.

#### RESUMEN

**Objetivo:** El presente estudio identificó la relación entre la presencia de las enfermedades crónicas no transmisibles y la capacidad funcional de ancianos residentes. **Método:** Se trata de un estudio descriptivo correlacional, de naturaleza cuantitativa, que se evaluaron 90 ancianos inscritos en la Estrategia de Salud de la Familia. **Resultados:** fue demostrado una alta frecuencia de las enfermedades crónicas en los ancianos, se demostró especialmente la Hipertensión Arterial y la Diabetes Mellitus (97.8 % y 24.4 %, respectivamente). En relación a las actividades de la vida diaria, el 16% de los ancianos presentaron dependencia por lo menos a una actividad, y para las actividades instrumentales de la vida diaria, el 81% presentaron alguna dependencia para su realización. **Conclusión:** En la realidad estudiada, ser hipertenso, o ser hipertenso y diabético, al mismo tiempo, está relacionado a la presencia de dependencia funcional en el anciano. **Descriptor:** Envejecimiento, Enfermedades crónicas, Actividades cotidianas, Ancianos, Enfermería.

<sup>1</sup> Nurse. Master Student from the Post-Graduation Program in Health and Society from the State University of Rio Grande do Norte. edjorn@yahoo.com.br <sup>2</sup> Nurse. Master in Nursing. Assistant Professor from the Faculty of Health Sciences of Trairi. Federal University of Rio Grande do Norte. lucianepoliveira@yahoo.com.br <sup>3</sup> Nurse. PHD in Health Sciences. Adjunct Professor III from the Graduation and Post-Graduation Course in Nursing (Academic Master and Doctorate) from Department of Nursing from the Federal University of Rio Grande do Norte (UFRN). Member of the Research Group Care and Epidemiological Practices in Health and Nursing/UFRN. Email: rirosendo@yahoo.com.br.

## INTRODUCTION

In recent decades, many countries have experienced the process of population aging, which means greater growth of the group of people over 60 years of age in comparison to other age groups.<sup>1</sup>

This process has proved to be continuous, given that one of its characteristics is the increased life expectancy, fact currently observed in developed countries and in those undergoing a development process. The current situation of the Brazilian demographic context is due to the reduction in infant mortality and the decreased fertility, which have been occurring in a quick manner over the last three decades.<sup>2</sup>

It is estimated that, in 2025, the number of elderly people will reach approximately 840 million in developing countries, representing 70% of people aged over 60 years across the world.<sup>3</sup> One can also verify a greater number of people affected by Chronic Non-Communicable Diseases (NCD) and disabilities arising from these illnesses.<sup>2</sup>

The NCD are among the main causes of death across the world, and the most frequent are cardiovascular system diseases, cancer, chronic respiratory system diseases and diabetes. In 2002, such diseases caused 29 million deaths throughout the world.<sup>4</sup> In their daily practices, people can observe that many seniors with chronic diseases might also present some difficulty in performing Basic Daily Life Activities (DLA) and Instrumental Daily Life Activities (IDLA).

The Basic Daily Life Activities (DLA) are tasks that a person needs to perform self-care, such as: taking a bath, getting dressed, going to bathroom, walking, eating, moving from bed to chair, moving on bed and having urinary and fecal incontinences. Regarding the Instrumental Daily Life Activities (IDLA), they are the abilities of the elderly people to manage the environment in which they live, and include the following actions: preparing meals, doing household duties, washing clothes, handling money, using the telephone, taking medications, making purchases and using the means of transportation.<sup>5, 6</sup>

Currently, there is a trend of an increasing number of elderly individuals with chronic diseases, which are directly related to greater incapacity for the performance of their household tasks. While the disability causes greater vulnerability and dependence in old age, increases the concern about the well-being and quality of life of elderly people, in addition to the implications that reverberate in the lives of their families and in the demands for health services.<sup>7, 8</sup>

The National Health Policy for the Elderly Person (PNSPI, as per its acronym in Portuguese) highlights that the main problem affecting the elderly subject is the loss of physical and mental abilities, which are necessary for the performance of basic and instrumental daily life activities.<sup>9</sup>

In this context, the term “functional assessment” becomes essential for the establishment of appropriate clinical diagnoses and judgments, which will serve as a basis

for the decisions about the treatments and care actions required to the elderly population. For this reason, the present study seeks answers to the following questioning <<What is the relationship between the presence of chronic non-communicable diseases and the functional capacity of elderly people? >>

It is believed that the understanding of the factors that might be related to the functional capacity of elderly subject can assist in the planning of actions and programs aimed at preventing these health problems and, consequently, minimizing the burden on the family and providing a better organization of health services.

In light of the foregoing, this study aims at identifying the relationship between the chronic non-communicable diseases and the functional capacity of elderly people living in the municipality of Japi, Rio Grande do Norte, Brazil.

## METHOD

This is a descriptive and correlational study, with quantitative nature, conducted in the municipality of Japi, Rio Grande do Norte State, Brazil. The aforementioned municipality has 560 elderly people living in urban and rural areas.

From this information and taking into account a confidence interval of 95% and a sampling error of 5%, we have calculated a sample of 83 elderly subjects through the software Epi-Info, version 3.5.2; however, we decided to increase the number to 90 subjects in order to circumvent possible losses. The sampling was stratified by considering the proportion according to place of residence, with the collection of information from a third of the individuals living in the rural area and two-thirds of those living in the urban area, with participation of people of both sexes.

For composing the sample, the participants should present the following inclusion criteria: being elderly (60 or older); having registration in some Family Health Unit of the municipality; being able to communicate; having at least one diagnosed chronic disease (registered in medical chart). This study has excluded: elderly subjects with any dementia confirmed by a medical diagnosis; elderly subjects who did not agree to participate in the research; and elderly people who were under the legal guardianship of a tutor.

The research was submitted to the Research Ethics Committee of the Federal University of Rio Grande do Norte (Opinion nº 422/2010). We have respected all prerogatives issued by the Resolution 196/96 of the National Health Council and other normative acts related to research with human beings. All the participants had access to the Free Informed Consent Form (FICF), and only those who agreed to participate, signed the form and answered to the research instruments.

In order to characterize the sample, the participants answered to a structured interview script containing sociodemographic aspects (name, age, gender, marital status, address, number of people per household, presence or not of caregiver, schooling, color and family income) and in relation to the presence or not of chronic diseases.



This study made use of the Assessment Form of Katz and the Lawton Scale to assess, respectively, the ability of the elderly subject to develop its DLA and IDLA, as available in the used literature.<sup>6, 9, 10</sup>

The dependent variable is the functional capacity of the elderly subject. In order to measure it, the information of DLA and IDLA were used. For this study, the elderly subjects were classified as independent if they could perform all assessed activities and considered dependent if they failed to perform at least one of the respective activities. The independent variables were divided into sociodemographic and chronic diseases.

In the data analysis, we made use of the software SPSS, version 16.0, for holding the statistical calculations. In order to determine the association between functional capacity and chronic diseases, an analysis of logistic regression was performed. Bivariate analyzes were performed, with the obtaining of values of chi-square and odds ratio. The results of the model were presented as odds ratios and the respective confidence intervals of 95%.

## RESULTS AND DISCUSSION

From the analysis of data of this study, it was found that the age of the elderly subjects ranged between 60 and 91 years old. The elderly aged 80 or over accounted for 26,7%. The population was predominantly female (74,4%), with the male proportion of 17,8%.

The average age and the greater frequency of the female gender in the present study corroborate the results of other studies.<sup>7, 11-13</sup>

The following chronic diseases were identified: systemic arterial hypertension (SAH) (97,8%), diabetes mellitus (DM) (24,4%) osteoporosis (2,2%), arthrosis, acute myocardial infarction (AMI), obesity and cancer (1,1% each). Such diseases were treated as independent variables. Nevertheless, only arterial hypertension and diabetes mellitus showed statistically significant values for the completion of inferential statistical analysis.

Arterial hypertension is a highly prevalent disease in elderly people, thereby being a determining factor in the increased rates of morbidity and mortality in this population. With the aging process, there is the emergence of physiological changes that predispose the elderly people to other diseases in addition to arterial hypertension. One is the diabetes mellitus, common among older people mainly due to the large loss of lean mass, responsible for the distribution of insulin-mediated glucose and increased visceral fat, linked to increased insulin resistance.<sup>14</sup>

Regarding the functional dependence, it was found that 16% of elderly showed dependence to perform at least one DLA and 81% of elderly showed some dependence to perform the IDLA.

Based on the data of Table 1, one can observe that the chronic diseases showed influence on the functional capacity of elderly subjects. Although the p-value is not statistically significant for the association between arterial hypertension and dependence for IDLA, one can observe that its presence increases by 70% the chance of the elderly

person becoming dependent. It should be also noted that the fact of simultaneously being hypertensive and diabetic triples the chances of the elderly subject becoming dependent for IDLA.

In the study conducted by Virtuoso Júnior and Guerra,<sup>15</sup> it was statistically found that hypertension was also associated with greater limitations in the elderly person (OR = 4,2). The results of the present study also corroborate the findings of Rosa et al.,<sup>16</sup> where the hypertension exerted influence on the functional capacity of the elderly subject.

Regarding the diabetes mellitus in an isolated way, the present study did not find statistically significant ratio with the functional capacity of the elderly subject. This association was also not identified in the study conducted by Alves et al.<sup>7</sup> However, in the study conducted by Rekeneire et al.,<sup>17</sup> this association was identified, in which the elderly people with diabetes mellitus had a 70% chance of having functional limitations.

In Brazil, the diabetes mellitus and the arterial hypertension are the main responsible for the rates of mortality and hospital admissions, in addition to amputations. One can observe that, in literature, there are many publications that might assist in developing actions for preventing and delaying the onset of diabetes and its eventual complications.<sup>18</sup>

For the accomplishment of statistical analysis, the elderly subjects were divided into two groups: those who had only a disease and those who had two or more diseases. From this analysis, it was found that, among those who had only a disease, the arterial hypertension was only one that showed a feasible frequency for the completion of statistical tests. As for the second group, only those who were simultaneously bearers of arterial hypertension and diabetes mellitus showed a feasible frequency for the tests. In this sense, Table 1 shows the results of the logistic regression.

Table 1 - Distribution of diseases among the elderly subjects and their association with the functional dependence in DLA and IDLA. Japi, August 2010. N=90.

		Dependents in DLA		Dependents in IDLA	
Presença da	n	OR	P*	OR	P*
SAH					
Yes	62	0,124	0,001	1,700	0,140
No	28	1,00		1,00	
SAH and DM					
Yes	18	4,00	0,031	0,529	0,094
No	72	1,00		1,00	

The presence of diseases (arterial hypertension and diabetes mellitus) presented a statistically significant association in this study. It should be observed that there are few studies that performed researches from the analysis of the impact of two or more morbidities on the functional capacity. Nevertheless, one can verify that the chronic diseases are widely studied in relation to their influence on the health of elderly people, especially on the functional capacity. For example, it is known that diabetes mellitus is mainly associated to vascular and neuropathic complications that, consequently, affect the functional capacity.<sup>18</sup> In the study of Bayliss et al.,<sup>19</sup> it was found that people who had

comorbidities showed greater functional limitations. By considering the impact of these diseases on the health of elderly people, as well as their high prevalence in this population, one can justify their association with the functional capacity for the performance of DLA and IDLA.

In the present study, diseases such as osteoporosis, arthrosis, AMI, obesity and cancer did not reveal statistically significant results to be related to the dependence in relation to the functional capacity of the elderly subjects. It is known that a condition of greater independence is beneficial to elderly's health, since, as seniors enjoy independence and autonomy, they themselves can provide arrangements in order to enable their environment to become safer and, thus, have more active lives.<sup>20</sup>

Furthermore, we sought to verify if there was an association between the sociodemographic characteristics and the functional dependence in the elderly subjects. Nonetheless, it was not identified a statistically significant ratio between functional the dependence in ADL and the following variables: gender ( $p=0,075$ ), age ( $p=0,084$ ), marital status ( $p=0,938$ ), family size ( $p=0,060$ ) and family income ( $p=0,939$ ). When these same sociodemographic variables were related to the fact of being dependent for IDLA, it also failed to identify a statistically significant ratio to gender ( $p=0,551$ ), age ( $p=0,811$ ), marital status ( $p=0,127$ ), family size ( $p=0,203$ ) and family income ( $p=0,633$ ).

Opposed to the results encountered in the present study about the influence of sociodemographic factors on the functional capacity, the study conducted by Virtuoso Júnior and Guerra,<sup>15</sup> with low-income elderly females, found that age and marital status were associated with greater functional limitations. Still in the same study, they observed that the elderly women who were between 80 or over ( $p=0,001$ ) were nine times more likely to have some functional limitation. Regarding the marital status widow ( $p=0,001$ ), they verified that those chances would be 3,2%.

One can observe that the number of independent elderly subjects for DLA in the present study was higher than the percentage encountered in the study performed by Costa,<sup>11</sup> where this value reached 57,9%. In the study conducted by Nakatani,<sup>21</sup> the frequency of elderly subjects classified as independent in all the functions corresponded to 59,1%.

By considering the percentage of elderly subjects dependents for IDLA, one can observe that the surveyed population has a high number of elderly dependents when compared to the number found in the study conducted in a similar context by Maciel and Guerra,<sup>22</sup> in which 52,6% of elderly were classified as dependent for IDLA. Concerning the study conducted by Duca et al.,<sup>3</sup> 28,8% of the surveyed population showed some type of disability for IDLA, being that 10,4% reported disability in two to four activities and 11,3% for five or more instrumental activities.

Chronic diseases are most prevalent in the population so that the WHO has warned that these illnesses will be the major cause of death and disabilities across the world in the year 2020, thereby contributing to the increased cost of health care actions for the entire society.<sup>2</sup> With the population aging, it becomes important to accomplish studies that seek to determine what factors are related to the occurrence of chronic diseases in the older population.<sup>23</sup>

When assessing the functional capacity, one seeks to systematically verify at what level the diseases hamper the performance, in an autonomous and independent manner, of DLA of elderly people, thereby allowing the development of a more suitable care plan.<sup>9</sup>

In this context, a diagnostic assessment of functional capacity becomes crucial to establish the appropriate diagnosis, planning and interventions for the development of care actions necessary for the elderly population. Furthermore, one should note that such assessment instruments allow assessing the effectiveness and efficiency of the implemented actions.<sup>18</sup>

## CONCLUSION

The data analyzed in this study allow us to conclude that the presence of arterial hypertension and of comorbidities such as arterial hypertension and diabetes mellitus are determining factors for the limitations in the functional capacity of elderly subjects.

Regarding frequency of NCD, it was observed that the presence of arterial hypertension reached nearly all the surveyed elderly subjects. Such information does not only points out to the need to promote, prevent and control this disease, but also to prevent injuries, because arterial hypertension is one of the main risk factors for the development of cardiovascular diseases.

By considering that the Daily Life Activities are related to self-care and participation of the elderly person in its social environment and reflect the ability of an individual to independently live in its home and within the community, it is essential that professional of the health staff start to routinely use the already suggested instruments by the Ministry of Health and are able to carry out the assessment of the functional capacity of the elderly person and, if possible, in an interdisciplinary form.

Finally, it is believed that these results might serve as a basis for the development of strategic actions for monitoring the elderly people, with special attention to those who already have a diagnosed chronic disease and/or with some level of dependence to perform their Daily Life Activities, given that that we should always desire the compliance with the primary purpose of the National Health Policy for the Elderly Person in force, in order to recover, maintain and promote the autonomy and the independence of older people in line with the principles and guidelines of the Brazilian Unified Health System.



## REFERENCES

1. Camarano AA. Envelhecimento da população brasileira: uma contribuição demográfica. Rio de Janeiro: IPEA; 2002.
2. Litvoc J, Brito FCd. ENVELHECIMENTO: PREVENÇÃO E PROMOÇÃO DA SAÚDE. São Paulo: Atheneu; 2004.
3. Del Duca GF, Silva MCd, Hallal PC. Incapacidade funcional para atividades básicas e instrumentais da vida diária em idosos. Rev Saude Publica. 2009;43:796-805.
4. Yach D, Hawkes C, Gould L, Hofman KJ. The global burden of chronic diseases: overcoming impediments to prevention and control. JAMA. 2004;291(21):2616-22.
5. Costa EC, Nakatani AYK, Bachion MM. Capacidade de idosos da comunidade para desenvolver Atividades de Vida Diária e Atividades Instrumentais de Vida Diária. Acta Paul Enferm. 2006;19(1):43-8.
6. Duarte YAdO, Andrade CLd, Lebrão ML. O Índice de Katz na avaliação da funcionalidade dos idosos. Rev Esc Enferm USP; 2007;317-25.
7. Alves LC, Leimann BCQ, Vasconcelos MEL, Carvalho MS, Vasconcelos AGG, Fonseca TCOd, et al. A influência das doenças crônicas na capacidade funcional dos idosos do Município de São Paulo, Brasil. Cadernos de saude publica / Ministerio da Saude, Fundacao Oswaldo Cruz, Escola Nacional de Saude Publica. 2007;23:1924-30.
8. Ferreira OGL, Maciel SC, Silva AO, Santos WSD, Moreira MASP. O envelhecimento ativo sob o olhar de idosos funcionalmente independentes. Rev Esc Enferm USP; 2010:1065-9.
9. Brasil. Envelhecimento e Saúde da Pessoa Idosa. Cadernos de Atenção Básica. nº 19. Brasília: Ministério da Saúde; 2006.
10. Potter PA, Perry AG. Fundamentos de Enfermagem. 7th ed. Rio de Janeiro: Elsevier; 2009.
11. Costa EC, Nakatani AYK, Bachion MM. Capacidade de idosos da comunidade para desenvolver Atividades de Vida Diária e Atividades Instrumentais de Vida Diária. Acta Paul Enferm 2006.
12. Alves LC, Leite IdC, Machado CJ. Fatores associados à incapacidade funcional dos idosos no Brasil: análise multinível. Rev Saude Publica. 2010;44:468-78.
13. Cartaxo HGdO, Moura PVd, Silva EAPCd, Vasconcelos ASd, Mariz LS, Freitas CMSMd. Qualidade de vida: avaliação da capacidade funcional de um corpo que envelhece ativo. R pesq: cuid fundam online; 2011.
14. Freitas EV. Tratado de Geriatria e Gerontologia. 2nd ed. Rio de Janeiro: Guanabara Koogan 2006.
15. Júnior JSV, Guerra RO. Fatores associados às limitações funcionais em idosas de baixa renda. Rev Assoc Med Bras 2008;430-5.
16. Rosa TE, Benício MH, Latorre MdoR, Ramos LR. Fatores determinantes da capacidade funcional entre idosos. Rev Saude Publica. 2003;37:40-8.

17. De Rekeneire N, Resnick HE, Schwartz AV, Shorr RI, Kuller LH, Simonsick EM, et al. Diabetes Is Associated With Subclinical Functional Limitation in Nondisabled Older Individuals. *Diabetes care*. 2003 December 1, 2003;26(12):3257-63.
18. Brasil. Diabetes Mellitus. Cadernos de Atenção Básica. nº 16. Brasília: Ministério da Saúde 2006.
19. Bayliss EA, Bayliss MS, Júnior JEW, Steiner JF. Predicting declines in physical function in persons with multiple chronic medical conditions: What we can learn from the medical problem list. *Health Qual Life Outcomes*. 2004(2):47-54.
20. Nery AL. Envelhecimento e qualidade de vida na mulher. In: Congresso Paulista de Geriatria e Gerontologia. Campinas, 2001.
21. Nakatani AYK, Silva LBd, Bachion MM, Nunes DP. Capacidade funcional em idosos na comunidade e propostas de intervenções pela equipe de saúde. *Rev Eletr Enf*. 2009;11(1):144-50.
22. Maciel ÁCC, Guerra RO. Influência dos fatores biopsicossociais sobre a capacidade funcional de idosos residentes no nordestes do Brasil. *Rev bras epidemiol*. 2007;10:178-89.
23. Bueno JM, Martino HSD, Fernandes MFS, Costa LS, Silva RR. Avaliação nutricional e prevalência de doenças crônicas não transmissíveis em idosos pertencentes a um programa assistencial. *Cien Saude Colet*. 2008;13:1237-46.

Received on: 16/10/2013  
Required for review: No  
Approved on: 16/01/2014  
Published on: 01/04/2014

Contact of the corresponding author:  
Edson Batista dos Santos Júnior  
Rua Manoel Medeiros, 59, Centro, Japi, RN, Brasil, 59213-000.